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protein same protenoid same (microsphere or microparticle)	4

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Search: L2

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L2	protein same protenoid same (microsphere or microparticle)	4	L2
L1	protein adj10 protenoid adj10 microsphere	0	L1

END OF SEARCH HISTORY

L2: Entry 4 of 8 File: USPT Jun 2, 1998

DOCUMENT-IDENTIFIER: US 5759517 A
**** See image for Certificate of Correction ****
TITLE: Hemoglobins as drug delivery agents

Brief Summary Text (142):
Mutations to Protect the Disulfide Bond. In serum, disulfide bonds are reduced by endogenous thiols, such as glutathione. The mechanism of these reactions involves the thiolate anion as the actual reducing species (Creighton, T. E. (1978) Prog. Biophys. Molec. Biol., 33:259-260 231-297; Creighton, T. E. (1975) J. Mol. Biol.; 96:767; Creighton, T. E. (1977) J. Mol. Biol., 113:313). Thus the rate of reduction will be a function of the molecular electrostatic environment in the vicinity of the disulfide bond. A slower rate of reduction would be predicted if the disulfide was located in an electrostatically negative environment,, due to the repulsion of the thiolate anion. In the case of glutathione, even the unreactive transient protonated species has a net negative charge and would be repulsed, thus further reducing the rate of disulfide reduction.

Brief Summary Text (144):
Crevice Cysteine Mutants. Crevice-cysteine hemoglobin mutants are also of interest and are prepared by site specific mutagenesis. The mutant crevice cysteine is then disulfide bonded to the drug. The walls of the crevice will sterically hinder attack by serum reducing agents on the drug-hemoglobin disulfide bond.

Other Reference Publication (99):
Murakami et al.; A genetically engineered P450 monooxygenase: Construction of the functional fused enzyme between rat cytochrome P450c and NADPH-cytochrome P450 reductase; DNA, 6:189-97 (1987).

Other Reference Publication (148):
Villafranca et al.; An engineered disulfide bond in dihydrofolate reductase Biochemistry, 26:2182-2189 (1987).

Refine Search

Search Results -

Terms	Documents
L1 and reduce	50

Database:

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Search: L3

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Search History

DATE: Tuesday, April 26, 2005 Printable Copy Create Case

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DB=USPT,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR			
L3	L1 and reduce	50	L3
L2	L1 and reductase	8	L2
L1	(blood or serum) adj5 disulfide	103	L1

END OF SEARCH HISTORY

L1: Entry 1 of 1 File: USPT Mar 19, 2002

DOCUMENT-IDENTIFIER: US 6358501 B1
TITLE: Polypeptide-polysiloxane copolymers

Brief Summary Text (16):
Natural proteins and synthetic peptides are linear polymers of amino acids which are linked together via an amide bond (peptide bond). However, when an amino acid is heated to above 100.degree. C., a polymer is not usually obtained. Rather, a rapid black discoloration is observed, which can be attributed inter alia to the formation of heterocycles. Exceptions to this are aspartic acid, which forms polysuccinimide upon heating, which can be converted into polyaspartic acid under basic conditions. Glutamic acid cyclizes upon heating to give monomeric pyroglutamic acid (2-pyrrolidone-5-carboxylic acid). In the early 1950s, Fox and Middlebrook (Chemtech, May 1996, p. 26-29) discovered that heating glutamic acid and aspartic acid gives a copolymer of the two amino acids. Further, other amino acids, which are unable to form polymers on their own, can be reacted with glutamic acid and/or aspartic acid to give copolymers. A feature of these "thermal proteins" or "protenoids" is that they have nonrandom distribution in the amino acid sequence. This observation has led to the development of a unique research direction which is based on the origin of life based on proteins which can be obtained under terrestrial conditions. Thermal proteins have a molecular mass of up to 9000, which is low compared with natural proteins, and are therefore nontoxic and thus biocompatible with living systems. They are used, for example, in the microencapsulation of pharmaceuticals (U.S. Pat. Nos. 4,963,364, 4,925,673), as artificial skin (U.S. Pat. No. 4,996,292) or as active ingredient for improving memory performance (U.S. Pat. No. 5,373,085). The industrial use as inhibitors of mineral deposition in cooling-water systems is also described (U.S. Pat. No. 4,534,881). A further important advantage is their biodegradability.

L3: Entry 32 of 50 File: USPT Mar 21, 1995

DOCUMENT-IDENTIFIER: US 5399331 A
TITLE: Method for protein-liposome coupling

Brief Summary Text (17):
An alternative to the above approach to coupling is that of Martin and Papahajopoulos, J. Biol. Chem., 257, 286-288 (1982) who developed the technique of covalently attaching antibodies and Fab' fragments to liposomes containing N-[4-(p-maleimidophenyl)-butyryl]phosphatidylethanolamine (MPB-PE) by formation of a thio-ether linkage with the maleimido group, a linkage which is considerably less susceptible to reducing conditions found in the serum than is the disulfide linkage of the Leserman method. The Martin/Papahajopoulos approach as well as various modifications of this approach [see, for example, Wolff and Gregoriadis, Biochem. Biophys Acta, 802, 259 (1984), Martin, et al., Biochemistry, 20, 4229 (1981) and Goundalkar, et al., J. Pharm. Pharmacol., 36, 465 (1984) represent the most versatile approaches to coupling currently available.

Detailed Description Text (8):
The reactive liposomes of the present invention differ from prior art reactive liposomes in that the reactive liposomes of the present invention are substantially pure, i.e., they do not contain substantial amounts of ring-opened reactive lipid, for example, MPB-lipid. While not being limited by way of theory, such ring-opened reactive lipids are believed to affect the ability of the reactive liposome to form conjugated liposomes, and reactive liposomes containing appreciable amounts of ring opened reactive lipids markedly reduce the efficiency of a liposome to conjugate a protein or other molecule. This reduced efficiency plus the fact that reactive lipids tend to destabilize conjugated liposomes results in the reactive lipids and liposomes produced therefrom having significantly more favorable characteristics, including enhanced stability as well as enhanced binding characteristics, than the prior art conjugated liposomes.

Detailed Description Text (17):
When protein is covalently or non-covalently linked to liposomes to produce protein-liposome conjugates, the liposomes may aggregate and increase in size. In such cases, it may be preferable to extrude the liposomes to produce sized liposome conjugates. Methods for producing sized liposomes to reduce aggregation are available in the art and have been previously described in U.S. patent application Ser. No. 370,650, entitled "Preparation of Targeted Liposome Systems of a Defined Size Distribution," filed Jun. 23, 1989 which is incorporated by reference herein.

Detailed Description Text (42):
In accordance with the invention, it has been found that this transmembrane potential can be used to load ionizable antineoplastic agents into the liposomes or alternatively, into the sized liposome conjugates. Specifically, once liposomes having a concentration gradient and thus a transmembrane potential of the appropriate orientation have been prepared, the process of loading pharmaceutical agents into the liposomes reduces to the very simple step of adding the agent to the external medium. Once added, the transmembrane potential will automatically load the agent into the liposomes.

Detailed Description Text (46):

As with the transmembrane loading aspects of the invention, the transmembrane potentials used to reduce the rate of drug release are created by adjusting the concentrations on the inside and outside of the liposomes or liposome conjugates of a charged species such as Na+, K+ and/or H+. Indeed, if the liposomes or liposome conjugates have been loaded by means of a transmembrane potential produced by such a concentration gradient, simply keeping the liposomes or liposome conjugates in an external medium which will maintain the original concentration gradient will produce the desired reduction in the rate of release. Alternatively, if a transmembrane potential has not already been created across the liposome or liposome conjugates membranes, e.g., if the liposomes or liposome conjugates have been loaded using a conventional technique, the desired transmembrane potential can be readily created by changing the composition of the external medium using the exchange techniques described above.

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L4: Entry 1 of 2 File: USPT Oct 21, 1997

DOCUMENT-IDENTIFIER: US 5679377 A
**** See image for Certificate of Correction ****
TITLE: Protein microspheres and methods of using them

Brief Summary Text (2):
Proteins have also been used to form microparticles or microspheres for drug delivery. R. C. Oppenheim, Polymeric Nanoparticles and Microspheres Guiot and Couvreur, editors, chapter 1, pp. 1-25 (CRC Press, 1986), reviews formation, properties and drug delivery using proteins. Most are crosslinked in solution using glutaraldehyde, or hardened at elevated temperatures. Unfortunately, there are problems with significant loss of biological activity of incorporated materials and lack of controlled size and in vivo degradation rates. For example, zein microspheres prepared as carriers for chemotherapeutic agents by crosslinking a zein solution containing the drug, as reported by Suzuki, et al., Chem. Pharm. Bull. 37(4), 1051-1054 (1989), were quite heterogeneous in size, and displayed incorporation of less than 30% of the drug. This same group reported in Chem. Pharm. Bull. 37, 757-759 (1989), that yield and size range were improved by addition of a catalytic amount of dl-camphorsulfonic acid and rapid addition of polyvinylpyrrolidone, a surfactant and binder. Incorporation of drug was still less than 35%, however. PCTUS87/02025 by Clinical Technologies Associates, Inc., reports the preparation and use for drug delivery of microspheres made of "protenoids", thermal condensation polymers of mixed amino acids. While these materials have useful properties, they are designed for specific applications and targeted release as a function of pH.

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L4: Entry 2 of 2 File: USPT Dec 21, 1993

DOCUMENT-IDENTIFIER: US 5271961 A
TITLE: Method for producing protein microspheres

Brief Summary Text (2):
Proteins have also been used to form microparticles or microspheres for drug delivery. R. C. Oppenheim, Polymeric Nanoparticles and Microspheres Guiot and Couvreur, editors, chapter 1, pp. 1-25 (CRC Press, 1986), reviews formation, properties and drug delivery using proteins. Most are crosslinked in solution using glutaraldehyde, or hardened at elevated temperatures. Unfortunately, there are problems with significant loss of biological activity of incorporated materials and lack of controlled size and in vivo degradation rates. For example, zein microspheres prepared as carriers for chemotherapeutic agents by crosslinking a zein solution containing the drug, as reported by Suzuki, et al., Chem. Pharm. Bull. 37(4), 1051-1054 (1989), were quite heterogeneous in size, and displayed incorporation of less than 30% of the drug. This same group reported in Chem. Pharm. Bull. 37, 757-759 (1989), that yield and size range were improved by addition of a catalytic amount of dl-camphorsulfonic acid and rapid addition of polyvinylpyrrolidone, a surfactant and binder. Incorporation of drug was still less than 35%, however. PCTUS87/02025 by Clinical Technologies Associates, Inc., reports the preparation and use for drug delivery of microspheres made of "protenoids", thermal condensation polymers of mixed amino acids. While these materials have useful properties, they are designed for specific applications and targeted release as a function of pH.

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☐ 1. Document ID: US 5679377 A

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L4: Entry 1 of 2 File: USPT Oct 21, 1997

US-PAT-NO: 5679377
DOCUMENT-IDENTIFIER: US 5679377 A
**** See image for Certificate of Correction ****

TITLE: Protein microspheres and methods of using them

DATE-ISSUED: October 21, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bernstein; Howard	Cambridge	MA		
Morrel; Eric	Needham	MA		
Mathiowitz; Edith	Brookline	MA		
Schwaller; Kirsten	Duxbury	MA		
Beck; Thomas R.	Concord	MA		

US-CL-CURRENT: 424/491; 264/4.32, 264/4.6, 424/484, 424/485, 424/486, 427/2.14, 427/2.21, 427/213.31, 428/402.2, 428/402.21, 428/402.24, 514/866, 514/963, 514/965

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

☐ 2. Document ID: US 5271961 A

L4: Entry 2 of 2 File: USPT Dec 21, 1993

US-PAT-NO: 5271961
DOCUMENT-IDENTIFIER: US 5271961 A

TITLE: Method for producing protein microspheres

DATE-ISSUED: December 21, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mathiowitz; Edith	Brookline	MA		
Bernstein; Howard	Cambridge	MA		
Morrel; Eric	Needham	MA		

Schwaller; Kirsten Duxbury MA

US-CL-CURRENT: 427/213.31; 424/491, 424/499, 426/96, 427/213.3, 427/213.36

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw De

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Terms	Documents
protenoid same cross$	2

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L5: Entry 1 of 8 File: USPT Apr 6, 2004

DOCUMENT-IDENTIFIER: US 6716452 B1

**** See image for Certificate of Correction ****

TITLE: Active agent delivery systems and methods for protecting and administering active agents

Brief_Summary_Text (5):

Absorption of an orally administered active agent is often blocked by the harshly acidic stomach milieu, powerful digestive enzymes in the GI tract, permeability of cellular membranes and transport across lipid bilayers. Incorporating adjuvants such as resorcinol, surfactants, polyethylene glycol (PEG) or bile acids enhance permeability of cellular membranes. Microencapsulating active agents using protenoid microspheres, liposomes or polysaccharides have been effective in abating enzyme degradation of the active agent. Enzyme inhibiting adjuvants have also been used to prevent enzyme degradation. Enteric coatings have been used as a protector of pharmaceuticals in the stomach.

Detailed Description Text (11):

Other factors such as .pi.--.pi. interactions between aromatic residues, kinking of the peptide chain by addition of proline, disulfide crosslinking and hydrogen bonding can all be used to select the optimum amino acid sequence for a given application. Ordering of the linear sequence can influence how these interactions can be maximized and is important in directing the secondary and tertiary structures of the polypeptide.

L5: Entry 3 of 8 File: USPT Mar 19, 2002

DOCUMENT-IDENTIFIER: US 6358501 B1
TITLE: Polypeptide-polysiloxane copolymers

Brief Summary Text (14):
EP-A-0 540 357 (Croda, GB 9 123 251, November 1991) claims protein-silicone copolymers in which the silicone component is covalently bonded to the amino groups of the protein. In each case at least some of the silicone components contribute to the crosslinking between various protein chains, but additionally noncrosslinking siloxane units may also be present. Serving as protein component are natural proteins such as collagen, elastin etc., which have either been partially hydrolyzed or have been modified by chemical modification such as esterification or quatemization. The copolymers are formed by reaction of functional groups of silanes or silicones with the amino groups of the protein. This produces higher molecular weight polymers which also contain protein chains crosslinked with one another. Additional crosslinking can take place as a result of the condensation of silanol groups of the silanes or silicones. An important requirement for the reaction of the protein component is its solubility in water or another suitable solvent such as ethanol or propylene glycol or in mixtures thereof. Another prerequisite is the ability of the silicone component to effect crosslinking with the protein component. Required for this purpose are either polyfunctional silicones with suitable reactive groups such as acid halide, anhydride or epoxide groups, or monofunctional silicon compounds which contain silanol groups or groups which can form silanol groups by hydrolysis in situ, which cause crosslinking as a result of condensation to siloxane bonds. In order for the silicon compound to react with the protein, it must be soluble in the same solvent as the protein, which is preferably an aqueous protein hydrolyzate. Therefore, if water is solvent, an organofunctional silane with hydrolyzable groups is required. Here, the reaction conditions must be controlled very carefully. This is because first a pH above 7 is usually required so that the amino groups of the protein are reactive, and, second, rapid hydrolysis of the cleavable groups usually takes place under alkaline conditions. However, at the same time, a condensation of the silane takes place, meaning that the overall reaction can be controlled only with difficulty. This method, therefore, gives only crosslinked products. Since such products do not contain linear polydimethylsiloxane segments, their typical silicone properties are not very pronounced either. In addition, the products can be handled only in the form of aqueous solutions since a solid, water-insoluble film forms as soon as the water is removed by distillation or drying. The reaction can, for example, be carried out in ethanol so that organofunctional dimethylsilicones, which are insoluble in water, but soluble in ethanol at least in small amounts, can be used. However, it is necessary to use the ethyl ester of the protein hydrolyzate, which again involves additional reaction steps. In addition, the pH required for the reaction is adjusted using sodium hydroxide, which, at reaction temperatures around 70.degree. C., can cause undesired siloxane chain degradation. It is stated that the chemical structure of the protein-silicone copolymers is very complex and it is therefore impossible to assign to them an individual general structural formula.

Brief Summary Text (16):
Natural proteins and synthetic peptides are linear polymers of amino acids which are linked together via an amide bond (peptide bond). However, when an amino acid is heated to above 100.degree. C., a polymer is not usually obtained. Rather, a

rapid black discoloration is observed, which can be attributed inter alia to the formation of heterocycles. Exceptions to this are aspartic acid, which forms polysuccinimide upon heating, which can be converted into polyaspartic acid under basic conditions. Glutamic acid cyclizes upon heating to give monomeric pyroglutamic acid (2-pyrrolidone-5-carboxylic acid). In the early 1950s, Fox and Middlebrook (Chemtech, May 1996, p. 26-29) discovered that heating glutamic acid and aspartic acid gives a copolymer of the two amino acids. Further, other amino acids, which are unable to form polymers on their own, can be reacted with glutamic acid and/or aspartic acid to give copolymers. A feature of these "thermal proteins" or "protenoids" is that they have nonrandom distribution in the amino acid sequence. This observation has led to the development of a unique research direction which is based on the origin of life based on proteins which can be obtained under terrestrial conditions. Thermal proteins have a molecular mass of up to 9000, which is low compared with natural proteins, and are therefore nontoxic and thus biocompatible with living systems. They are used, for example, in the microencapsulation of pharmaceuticals (U.S. Pat. Nos. 4,963,364, 4,925,673), as artificial skin (U.S. Pat. No. 4,996,292) or as active ingredient for improving memory performance (U.S. Pat. No. 5,373,085). The industrial use as inhibitors of mineral deposition in cooling-water systems is also described (U.S. Pat. No. 4,534,881). A further important advantage is their biodegradability.

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☐ 1. Document ID: US 6716452 B1

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L5: Entry 1 of 8 File: USPT Apr 6, 2004

US-PAT-NO: 6716452
DOCUMENT-IDENTIFIER: US 6716452 B1
**** See image for Certificate of Correction ****

TITLE: Active agent delivery systems and methods for protecting and administering active agents

DATE-ISSUED: April 6, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Piccariello; Thomas	Blacksburg	VA		
Olon; Lawrence P.	Bristol	TN		
Kirk; Randall J.	Radford	VA		

US-CL-CURRENT: 424/457; 424/468, 514/2, 530/300, 530/345

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw De

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☐ 2. Document ID: US 6485706 B1

L5: Entry 2 of 8 File: USPT Nov 26, 2002

US-PAT-NO: 6485706
DOCUMENT-IDENTIFIER: US 6485706 B1

TITLE: Formulations comprising dehydrated particles of pharma-ceutical agents and process for preparing the same

DATE-ISSUED: November 26, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
McCoy; Randall	McConnellsburg	PA		
Libbey, III; Miles Augustus	Pennington	NJ		
Liu; Jle	Scotch Plains	NJ		
Williams, III; Robert O.	Austin	TX		

US-CL-CURRENT: 424/45; 424/46, 424/49, 424/491, 424/54, 514/2, 514/3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

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3. Document ID: US 6358501 B1

L5: Entry 3 of 8 File: USPT Mar 19, 2002

US-PAT-NO: 6358501
DOCUMENT-IDENTIFIER: US 6358501 B1

TITLE: Polypeptide-polysiloxane copolymers

DATE-ISSUED: March 19, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dietz; Thomas	Essen			DE
Lersch; Peter	Oberhausen			DE
Weitemeyer; Christian	Essen			DE

US-CL-CURRENT: 424/70.12; 424/78.1, 424/78.37, 528/26, 528/28

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

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4. Document ID: US 6309633 B1

L5: Entry 4 of 8 File: USPT Oct 30, 2001

US-PAT-NO: 6309633
DOCUMENT-IDENTIFIER: US 6309633 B1

TITLE: Amphiphilic drug-oligomer conjugates with hydroyzable lipophile components and methods for making and using the same

DATE-ISSUED: October 30, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ekwuribe; Nnochiri	Cary	NC		
Ramaswamy; Muthukumar	Cary	NC		
Rajagopalan; Jayanthi Sethuraman	Cary	NC		

US-CL-CURRENT: 424/85.1; 424/193.1, 424/194.1, 424/85.2, 424/85.4, 424/94.3, 435/188, 514/12, 514/2, 514/21, 514/3, 514/476, 514/506, 514/579, 514/613, 514/715, 514/8, 530/303, 530/345, 530/405, 530/406, 530/409, 530/410 , 530/411

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw De

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☐ 5. Document ID: US RE35862 E

L5: Entry 5 of 8 File: USPT Jul 28, 1998

US-PAT-NO: RE35862
DOCUMENT-IDENTIFIER: US RE35862 E

TITLE: Delivery systems for pharmacological agents encapsulated with proteinoids

DATE-ISSUED: July 28, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Steiner; Solomon	Mt. Kisco	NY		
Rosen; Robert	Rochester	NY		

US-CL-CURRENT: 424/455; 264/4, 264/4.1, 424/451, 424/484

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

☐ 6. Document ID: US 5679377 A

L5: Entry 6 of 8 File: USPT Oct 21, 1997

US-PAT-NO: 5679377
DOCUMENT-IDENTIFIER: US 5679377 A
**** See image for Certificate of Correction ****

TITLE: Protein microspheres and methods of using them

DATE-ISSUED: October 21, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bernstein; Howard	Cambridge	MA		
Morrel; Eric	Needham	MA		
Mathiowitz; Edith	Brookline	MA		
Schwaller; Kirsten	Duxbury	MA		
Beck; Thomas R.	Concord	MA		

US-CL-CURRENT: 424/491; 264/4.32, 264/4.6, 424/484, 424/485, 424/486, 427/2.14, 427/2.21, 427/213.31, 428/402.2, 428/402.21, 428/402.24, 514/866, 514/963, 514/965

Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw D

☐ 7. Document ID: US 5271961 A

L5: Entry 7 of 8 File: USPT Dec 21, 1993

US-PAT-NO: 5271961

DOCUMENT-IDENTIFIER: US 5271961 A

TITLE: Method for producing protein microspheres

DATE-ISSUED: December 21, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mathiowitz; Edith	Brookline	MA		
Bernstein; Howard	Cambridge	MA		
Morrel; Eric	Needham	MA		
Schwaller; Kirsten	Duxbury	MA		

US-CL-CURRENT: 427/213.31; 424/491, 424/499, 426/96, 427/213.3, 427/213.36

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw De

8. Document ID: US 4925673 A

L5: Entry 8 of 8 File: USPT May 15, 1990

US-PAT-NO: 4925673
DOCUMENT-IDENTIFIER: US 4925673 A

TITLE: Delivery systems for pharmacological agents encapsulated with proteinoids

DATE-ISSUED: May 15, 1990

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Steiner; Solomon	Mt. Kisco	NY		
Rosen; Robert	Rochester	NY		

US-CL-CURRENT: 424/455; 264/4, 264/4.1, 424/451, 424/484

Full | Title | Citation | Front | Review | Classification | Date | Reference | | | Claims | KWIC | Draw De

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DB=USPT,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR			
L7	protenoid and disulphide	4	L7
L6	protenoid and disulfide	4	L6
L5	protenoid and cross$	8	L5
L4	protenoid same cross$	2	L4
L3	protenoid adj10 cross$	0	L3
L2	protenoid adj5 cross$	0	L2
L1	protein adj3 protenoid	1	L1

END OF SEARCH HISTORY